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ABSTRACT

How people perceive disabilities plays an important role in the lives of individuals with disabilities, in rehabilitation theories, and in the professional training and practice of rehabilitation counselors. Individual differences in subjective perceptions of disabilities were investigated. Thirty-seven applicants (22 unsuccessful and 15 successful) to a rehabilitation counseling master's degree program and 29 graduate students (12 first year and 17 second year) in this program judged the similarity of all possible pairs of 12 disabilities. In addition, each of the 12 disabilities was rated on 15 attribute scales. The similarity judgments were scaled with a three-way multidimensional scaling (MDS) analysis, yielding a three-dimensional solution. Regressing attribute ratings onto the MDS stimulus coordinates suggested that the dimensions of normality, severity, and controllability were significant components of the disability perceptions. In comparison to the second year students, the unsuccessful applicants gave significantly more weight to the normality dimension in judging the similarities among disabilities. A comparison of these results with prior research and the applicability of the MDS dimensions to the design of interventions for changing attitudes toward disabilities are discussed. (Author/NB)

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Individual Differences in Perceptions of Disabilities: An Application to Rehabilitation Counseling Students

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Abstract

Individual differences in subjective perceptions of disabilities were investigated. Thirty-seven applicants (22 unsucessful and 15 successful) to and twenty-nine graduate students (12 first year and 17 second year) in a rehabilitation counseling master's degree program judged the similarity of all possible pairs of twelve disabilities. In addition, each of the twelve disabilities was rated on fifteen attribute scales. The similarity judgements were scaled with a three-way multidimensional scaling (MDS) analysis, yielding a three-dimensional solution. Regressing attribute ratings onto the MDS stimulus coordinates suggested that the dimensions of normality, severity, and controllability were significant components of the disability perceptions. In comparison to the second year students, the unsuccessful applicants gave significantly more weight to the normality dimension in judging the similarities among disabilities. A comparison of these results with prior research and the applicability of the MDS dimensions to the design of interventions for changing attitudes toward disabilities are discussed.

Individual Differences in Perceptions of Disabilities:
An Application to Rehabilitation Counseling Students

How people perceive disabilities plays an important role in the lives of individuals with disabilities, in rehabilitation theories, and in the professional training and practice of rehabilitation counselors. B. A. Wright (1983) argues that how counselors and the public interact with individuals with disabilities is influenced by the way disabilities are perceived. More importantly, the quality of this interaction affects how individuals with disabilitics perceive and feel about themselves (G. N. Wright, 1980). Despite their role in rehabilitation process and outcome, there has been little attention to the disability perceptions of rehabilitation counseling students or practitioners.

In the field of rehabilitation, the concepts of disability perceptions and attitudes towards disabilities have been used interchangeably. Nevertheless, recent attitudinal theory and research (e.g., Cialdini, Petty & Cacioppo, 1981) has suggested that cognitive perceptual structures underlie attitudes. This perceptual approach to understanding attitudes emphasizes a preexisting set of cognitive categories or labels upon which individual attitudes are based. Jones (1983) states people organize and summarize their knowledge about various relevant domains into cognitive structures, and these structures are assumed to shape the perceptions and interpretations of future inputs into these domains.

Generally, theorists have proposed three attitudinal components: affect, behavior, and cognition. The affective component is essentially the evaluative element in an attitude on

which the attitude holder judges the object to be good or bad. The behavioral component represents an intentional element in attitudes. Cognitions are basically beliefs about the attitudinal object. Some theorists have argued that attitudes are single dimensions of affect and that attempts at separate assignments of the cognitive and behavioral components would simply be measuring the same thing (Fishbein & Ajzen, 1974). On the other hand, theorists have proposed that there are two essential components involved, affect and cognition, which work simultaneously to influence intentions or overt behavior (Bagozzi & Burnkrant, 1979; Cooper & Croyle, 1984). Finally, it has been maintained that attitudes are comprised of all three components (affect, behavior, and cognition) and that separately examining each component adds to an understanding of attitudes (e.g., Kothandapani, 1971). Although the interrelationship among these three components is controversial (Lazarus, 1984, Zajonc, 1980), our present point of view, similar to Rajecki (1982), is that there is no harm in proceeding as if the separate components were the substance of attitudes. In this way, necessary components can be added or subtracted at will, as determined by more definitive theory and research.

Much of the rehabilitation literature has approached attitudes toward disabilities from a combined affective-cognitive point of view, primarily relying on the Attitudes Toward Disabled Persons Scale (ATDP; Yuker, Block & Campbell, 1960), a measure which draws upon both affective and cognitive dimensions. Attempts have been made to isolate the affective and cognitive dimensions which underlie the items of the ATDP. Livneh (1982) used factor analysis

of ATDP-A items and found four major factors: coping vs. succumbing, emotional need vs. emotional satisfaction, sensitivity vs. self-consciousness, and inferred morality. Livneh (1983) used smallest space analysis of ATDP-A items and found three dimensions: self-awareness attitudes (subjects' perceptions of differences between themselves and individuals with disabilities); attitudes about social integration and productiveness; and attitudes regarding behavioral performance and expectations of individuals with disabilities. Livneh maintains that these dimensions reflect an affective-cognitive, a social, and a behavioral orientation, respectively. Another preferred method of measurement has been some form of adjective rating scale, usually bipolar (Goodyear, 1983; Barker, 1964; Grand & Strohmer, 1983). These measures also include both affective and cognitive dimensions. For example, sad-happy, warm-cold (affective dimensions) are combined with insincere-sincere, wise-foolish (cognitive dimensions). Finally, projective techniques such as sentence completion and picture tests (Feinberg, 1967) have been used in assessing cognitive and affective components of attitudes toward disabilities. Occasionally, researchers have simply assessed the affective dimensions of attitudes, using measures such as the Carkhuff Communication Index (Fish & Smith, 1983), the Social Distance Scale (Siller, 1963; Feinberg, 1967), and the Feeling Checklist (Siller, 1963).

Few researchers have used a cognitive-perceptual approach in studying attitudes. For example, Golin (1970) examined how amount and favorableness of information affects university students' attitudes towards disability conditions. She found that attitudes

towards a nondisabled stimulus person were unaffected by amount and favorableness of information; however, an interaction was found between amount and favorableness of information affecting attitudes toward the psychiatric and physically disabled stimulus persons. Guskin (1963) compared judgements of similarity of ten types of disabilities under two conditions. Each condition provided behavioral descriptions varying in degree of prejudicial phrasing for each disability type. The more innocuous condition yielded dimensions of abnormal vs. typical, threatening vs. fearful, academic vs. social ineptness, physically tough vs. weak, and severe mental defect. The more prejudicial condition yielded dimensions of abnormal vs. typical, mental vs. social deviant, dangerous vs. helpless, and mental oddness vs. slowness. In general, these two studies indicate the promise of a cognitive-perceptual approach in studying how people react to individuals with disabilities and in designing attitude change techniques.

Altogether, the research on assessment of attitudes makes a strong case for the proposition that attitudes towards disabilities are multidimensional. This proposition has been stated by Altman (1981), Grand, Bernier & Strohmer (1982), and Livneh (1982, 1983, 1985), and directly addressed by Schmelkin (1982, 1985) who examined teachers' perceptions using a set of disabilities commonly encountered in educational settings, and a set of more generalized disabilities combining social and learning disorders with physical impairments. Schmelkin (1982) found progressively more complex dimensions with samples of students and educators as their experience with disabled students increased. A three-dimensional

solution was found for graduate students' perceptions which characterized types of disabilities along functional categories: Dimension 1 was labeled Behavioral-Emotional Disorders; Dimension 2, Cognitive Impairments; and Dimension 3, Physical Impairments. Similarly, a three-dimensional solution was found for regular teachers, with more differentiated functional dimensions: Dimension 1, labeled Behavioral-Emotional Disorders vs. Cognitive Impairments, Dimension 2, Physical Impairments vs. Learning Difficulties, and Dimension 3, Normal vs. Disabilities. The most complex solution was found for the perceptual space of special education teachers. This solution was four-dimensional, with Behavioral-Emotional Disorders vs. Cognitive and Physical Impairments on Dimension 1; Physical vs. Cognitive Impairments on Dimension 2; Behavioral-Emotional Disorders vs. Specific Learning Difficulties on Dimension 3; and Normal vs. Disabilities on Dimension 4. Using a larger set of disabilties, Schmelkin (1985) reported a four-dimensional solution: Dimension 1, labeled Physical Disabilities; Dimension 2, Behavioral-Emotional vs. Cognitive Disabilities; Dimension 3, Specific vs. Diffuse Disabilities; and Dimension 4, Visibility. In summary, Schmelkin reported dimensions corresponding to functional categories (physical disabilities, cognitive impairments, learning disabilities, behavioral-emotional disorders), as well as broader perceptual dimensions of normality, specificity, and visibility.

Schmelkin's research has been based on multidimensional scaling (Davison, 1983; Davison, Richards & Rounds, in press), a method that has been primar ly used to study social perception and cognition (Jones, 1983; Rounds & Zevon, 1983). In this case, multidimensional

scaling enabled Schmelkin to discover the major underlying dimensions among a set of disabilities which influences educators' perceptions. This technique allows a researcher to avoid imposing his/her own preconceived notions about what dimensions are important to the rating task. Instead, each respondent determines which aspects of the disabilities to use in judging the similarity among these disabilities. Separate results from attribute rating scales are then used to interpret the multidimensional solution.

Although the perceptions of students in education, educators, and special education teachers are important to examine, it seems that there is a need to focus on perceptions of rehabilitation counselors. Special education teachers are most often involved in mainstreaming students with learning disabilities, while rehabilitation counselors work in a variety of settings and are involved in a wide range of interventions directed towards goals related to the total life settings of clients having conditions or disorders more traditionally labeled disabilities (Jaques, Kauppi, Steger & Lofaro, 1979). Goodyear (1983) indicates that rehabilitation counselors maintain preconceived stereotypes about disabilities (and that these stereotypes affect the quality of services provided) despite efforts to modify these stereotypes during graduate training. Knowledge about the complexity of disability perceptions, the stability of perceptions over time, and the relative importance of cognitive dimensions underlying the formation of disability perceptions would be useful in designing training programs for rehabilitation counselors.

The purpose of the present study was to investigate rehabilitation counseling students' perceptions of disabilities and to discover the bases on which these perceptions are made. As a preliminary step, this study focuses on differences in perceptions of disabilities among students varying in rehabilitation counseling experience and academic training: unsuccessful and successful candidates to a graduate program in rehabilitation; and first and second year rehabilitation counseling students. Using individual differences multidimensional scaling (MDS), judgements of similarity of twelve disabilities were analyzed. To assist in the interpretation of the MDS results, a reanalysis of Tringo's (1970) hierarchy of preference toward disabled groups was conducted using multidimensional scaling. (Although Schmelkin (1984) has reanalyzed Tringo's data, the MDS stimulus coordinates were not reported, necessitating our reanalysis.) The MDS dimensional coordinates based on Tringo's data were then correlated with the MDS dimensional coordinates derived from the rehabilitation students' similarity judgements of twelve disabilities. In addition, a number of attribute scales on which students ranked or rated the disabilities were used to assist in interpretation of the MDS solution.

Method

Disabilities

The MDS approach requires careful selection of disabilities to be compared and attributes to be rated. Important criteria for selection are: comparability with prior research, the number of disabilities and attributes that can be adequately judged, representativeness of the disability sample, and subjects'

familiarity with the disabilities and attributes investigated. Comparability with prior research refers to a concern that the selection of disabilities are consistent with prior studies. Cumulative study of a common set of disabilities encourages programmatic, as opposed to fragmented, research efforts. The number of disabilities used in any investigation varies with the type of experimental task. In a complete paired comparison design (used in the present study), the number of pairs, $I(I-1)/2$, increases rapidly as the number of disabilities increases. This places limits on the number of disabilities that respondents can be expected to judge within the paired comparison format. It is important to recall that the set of disabilities in a particular study is a sample from a large domain. The representativeness of the set of disabilities used in a study then becomes a sampling issue. The most frequently encountered sampling strategy involves the investigator selecting disabilities that are judged to be representative of the domain in question. Very little is known about the effects of respondent's familiarity with the selected disabilities on scaling solutions. At the minimum, therefore, it is suggested that researchers incorporate familiarity checks into MDS designs and regress the familiarity ratings over the coordinates of the configuration. This procedure would indicate the manner in which familiarity affects the scaling solution.

Selection of the disabilities for the present study was guided by disability prevalence estimates, expectancy that the disabilities would be encountered by students during practicum and internship, and types of disabilities represented in prior research. A sample

size of twelve disabilities allowed adequate coverage of these criteria without making the similarity judgement task unmanageable. The disabilities selected were: arthritis, emphysema, alcoholism, cerebral palsy, stroke, visual impairment, epilepsy, cancer, hearing impairment, schizophrenia, diabetes, and mental retardation.

Attribute Ratings

Using prior research and theory about the nature of disability, and the principal investigator's teaching experience, the following attributes were initially hypthesized to account for students' perceptions of disabilities: severity, familiarity, counseling preference, employability, normality (respondents were asked to rate "how normal the general public perceives individuals with the disability"), attractiveness, and responsibility for conditions which led to the disability. These attributes are termed "coincident ratings" to differentiate them from a posteriori ratings described next.

After inspection of the MDS solution, the following attributes were hypothesized: psychological-physical symptoms, consequences, prognosis, amenability to rehabilitation methods, spread, responsibility, stereotyping, and visibility. These attributes are termed "a posteriori ratings." A brief description of each of the 15 attributes can be found in the Appendix. The twelve disabilities were rated on seven-point attribute scales. The seven coincident attribute scales were completed by the 66 respondents immediately following the similarity judgement task. The eight a posteriori attribute scales were completed by an independent sample of 28 rehabilitation students who did not complete the similarity

judgement task. The characteristics of those students were as follows: 12 males, 16 females; ages 19 to 50 years old, with a mean age of 32.22 years (SD = 15.78).

Respondents

The respondents included applicants to and graduate students in a rehabilitation counseling masters degree program: 22 unsuccessful applicants, 15 successful applicants, 12 first year students, and 17 second year students. For the total sample, 51 of the respondents were female, and 15 were male; ages ranged from 21 to 52 years, with a mean age of 30.41 years (SD = 7.82).

Procedure

A questionnaire was constructed in which respondents were asked to rate all possible pairs (n = 66) of the twelve disabilities on a nine-point similarity scale and to rate the disabilities on the seven attribute scales. Students completed the questionnaire during regular scheduled class periods. Applicants completed the questionnaire while they were attending an orientation session to the rehabilitation counseling program.

Analysis

The direct similarity judgements were scaled, separately for the four respondent groups and the total sample, using ALSCAL4 (Young & Lewyckyj, 1979) three-way analysis at an ordinal level of measurement and a continuous process of measurement. Mean attribute ratings for each scale were regressed onto the MDS stimulus (disability) coordinates, separately for the total sample and the four respondent groups, to test attribute hypotheses and assist in the interpretation of the dimensions. The MDS disability coordinate

estimates for all pairs of the four respondent groups were submitted to canonical correlation analysis to determine the similarities among their MDS solutions and to assess the reproducibility of the total group solution. Subject (salience) weights were submitted to a one-way analysis of variance to aid in the interpretation of subject spaces and determine the relative importance of the MDS dimensions for the total sample and the four respondent groups.

Results

ALSCAL4 solutions in two through five dimensons were obtained for the total sample with resultant Kruskal STRESS values of .282, .201, .164, and .128, respectively. Stress, a badness-of-fit index, is 0.0 if the distances computed from the stimulus coordinate estimates can perfectly account for the rank order of the proximity data (similarity judgements); stress increases toward 1.00 as the data are less well accounted for. Dimensions 2 through 5 accounted for .46, .52, .54, and .55 proportion of the variance, respectively. The improvement in fit obtained by adding the fourth and the fifth dimensions was approximately equal in size and smaller than the improvements obtained by adding the second and third dimensions, indicating that a three-dimensional solution should be retained. An inspection of the three- and four-dimensional solutions indicated that the three-dimensional solution was the most interpretable. As discussed below, results from the canonical regression, using the three-dimensional disability coordinate estimates, yielded three significant canonical correlations for each of the six possible pairs of the four respondent groups. On the other hand, an identical canonical regression using the four-dimensional

coordinates, resulted in three significant canonical correlations for all six analyses with the fourth canonical correlation being significant for only one of the six pairs of respondent groups. Evidently, the four respondent groups share similar disability perceptions in a three-dimensional space in comparison to a four-dimensional space. Based on these criteria of badness-of-fit, interpretability, and reproducibility; a three-dimensional solution was retained.

Stimulus Coordinates

Table 1 shows the stimulus coordinate estimates for the three-dimensional total group solution. The stimulus coordinates for Dimension 1 plotted against Dimension 2 and Dimension 1 plotted against Dimension 3 are displayed in Figure 1 and Figure 2, respectively. As shown in Table 1 and displayed in Figure 1, Dimension 1 has psychological-developmental disabilities (schizophrenia, mental retardation, alcoholism) at the negative end and physical disabilities (arthritis, stroke, emphysema) at the positive end. Dimension 2 is marked by terminal illnesses (cancer,

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Insert Table 1 and Figure 1 and Figure 2 about here

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emphysema, epilepsy) at the negative end and sensory/motor impairments (hearing impairment, visual impairment, arthritis) at the positive end. Inspection of Dimension 3 showed disabilities with preventable risk factors (diabetes, alcoholism, emphysema, cancer) at the negative end and disabilities with less preventable

risk factors (cerebral palsy, stroke, mental retardation, epilepsy) at the positive end.

Table 2 shows the multiple correlations and the zero-order correlations resulting from the regression of the attribute ratings onto the three-dimensional disability coordinate estimates for the total group. The correlations provide interpretive meaning for the dimensions. The physical disabilities at the positive end of Dimension 1 are perceived to be more "normal" ($r = .73$; $p < .01$) than the mental disabilities at the negative end of the dimension. Furthermore, the respondents preferred counseling clients with mental disabilities rather than those with physical disabilities ($r = -.60$; $p < .05$).

As shown in Table 2, the terminal illnesses at the negative end of Dimension 2 are perceived as more severe ($r = .52$; $p < .05$), as having a poorer prognosis ($r = .53$; $p < .05$), as less amenable to rehabilitation methods ($r = .59$; $p < .05$), and as more subject to spread ($r = -.55$; $p < .05$) than the sensory motor impairments at the positive end of the dimension. Finally, the disabilities with preventable risk factors at the negative end of Dimension 3 were perceived as more subject to control over the conditions which led

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Insert Table 2 about here

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to them ($r = .74$; $p < .01$), more attributable to responsibility ($r = .74$; $p < .01$), less subject to stereotyping ($r = -.55$; $p < .05$), less visible ($r = -.69$; $p < .01$), and

more attractive ($r = .60$; $p < .05$) than disabilities with less preventable risk factors at the positive end of the dimension.

External validity of the present three-dimensional solution was assessed by examining its relationship with MDS dimensions derived from Tringo's (1970; p. 302) social distance data. The social distance correlation matrix was scaled using ALSCAL4 (Young & Lewyckyj, 1979) nonmetric analysis, yielding a three-dimensional solution. The social distance stimulus coordinates were then correlated with the disability stimulus coordinates. Significant relationships were found between the normality dimension and Tringo's Dimension 1 ($r = .74$, $p < .01$) and between the severity dimension and Tringo's Dimension 3 ($r = -.57$, $p < .05$).

Individual Differences

The total group mean salience weights for the one through three dimensions were .42, .40, and .40, respectively. Thus, the respondents placed slightly more importance on the first dimension than the second and third dimensions in judging the similarity among the disabilities. Comparison among the respondent groups on the relative salience weights resulted in significant differences for Dimension 1 relative to Dimension 3, $F(3,62) = 2.66$, $p = .05$. These mean relative salience weights were .07, -.01, .02, and -.16 for the unsuccessful applicants, successful applicants, first-year students, and second-year students, respectively. Post hoc comparisons using a Student-Newman-Keuls test showed that the unsuccessful applicants gave significantly ($p < .05$) more weight to the normality dimension than the second-year students.

Three-dimensional ALSCAL4 solutions were obtained for each of student groups separately and then regressed onto each other using a canonical correlation analysis. Each of the six analyses resulted in three significant canonical correlations, the first two of which were greater than .88, indicating that these four solutions were nearly identical. For example, regressing the rejected applicants' solution onto the accepted applicants' solution yielded canonical correlations of .99 ($X^2 = 86.48$; $p < .001$), .98 ($X^2 = 49.99$; $p < .001$), and .93 ($X^2 = 20.53$; $p < .001$). In comparison, regressing the rejected applicants' solution onto the second year rehabilitation students' solution resulted in canonical correlations of .98 ($X^2 = 58.71$; $p < .001$), .92 ($X^2 = 27.58$; $p < .001$), and .65 ($X^2 = 7.99$; $p < .005$). Overall, the results from the six canonical regression analyses indicated that the unsuccessful applicants' and successful applicants' disability perceptions were nearly identical and that the rehabilitation students' disability perceptions were slightly more like each other than like those of the applicant groups.

Discussion

The findings of the present study show the type of dimensions and cognitive structure that may underlie attitudes toward disability for rehabilitation counseling students and argue for a multidimensional approach to understanding the perceptions of disability. The perceptual process of judged similarity of disabilities is represented by the dimension labels, such as normality, severity, and controllability, which signify certain shared assumptions. These shared assumptions may constitute the

foundation for reactions to disability. A structure of disability perceptions may therefore aid in understanding attitude formulation and reactions toward the disabled and guide efforts in the design of interventions to change those attitudes.

Dimension 1, a continuum from psychological to physical disabilities, is similar to Tringo's (1970) hierarchical ordering of disabilities based on social distance ratings. Dimension 1 in the present study correlated with Dimension 1 of the MDS solution of Tringo's data. In the reanalysis of Tringo's data by Schmelkin (1984), Dimension 1 was labeled Visibility through an inspection of the stimulus coordinates. In the present study, Dimension 1 was found to be highly related to normality ratings: students perceived the general public as attributing more "normality" to physical disabilities in contrast to psychological disabilities. Likewise, normality ratings were found to be highly correlated with Tringo's Dimension 1. In a study of teachers' perceptions of disabilities, Schmelkin (1982) also reported a normality dimension. Dimension 1 in the present study is also highly related to ratings of psychological-physical symptoms and consequences of the disabilities. Both these attributes are logically subsumed under the label Normality. Visibility ratings in the present study do not correlate with Dimension 1; instead, they are highly related to Dimension 3. This would suggest that normality and visibility are two distinct perceptual categories. Surprisingly, counselor preference was found to be negatively related to Dimension 1: rehabilitation students preferred counseling clients with psychological-developmental disabilities. This finding is contrary

to prior findings (e.g., Goodyear, 1983) and is counterintuitive to stigma notions.

Dimension 2 was related to ratings of severity, prognosis, spread, and amenability to rehabilitation. The label Severity was selected since it logically subsumes the concepts of prognosis, spread, and amenability to rehabilitation. Dimension 2 of the present study was related to Dimension 3 of the MDS solution of Tringo's data. Schmelkin (1984) had difficulty interpreting this dimension and ultimately labeled it Ostracism-Social Desirability; however, ratings on attractiveness and stereotyping, which seem logically related to Schmelkin's label, do not correlate with Dimension 3 of the MDS solution of Tringo's data. Severity may be a more appropriate label for this dimension.

Dimension 3 in the present study had the strongest correlation with controllability ratings and thus was labeled Controllability. More controllable disabilities (emphysema, diabetes, and alcoholism) were judged less subject to stereotyping and less visible than less controllable disabilities (cerebral palsy, mental retardation, and stroke). It is noteworthy that stroke was placed at the less controllable end of this dimension. Perhaps rehabilitation students were cognizant of the fact that many of the warning signs of stroke are often unnoticed and were guided by its reputation as "the silent killer." Dimension 3 of the present study did not significantly correlate with any of the dimensions of the MDS solution of the Tringo data. Since Tringo included some unusual items (dwarf, hunchback, ex-convict, old age) in his list of disabilities and the disabilities in the present study were not always identical

(e.g., Tringo used asthma, blindness, deafness, and mental illness whereas the corresponding disabilities in the present study were emphysema, visual impairment, hearing impairment, and schizophrenia), it is not surprising that the MDS solution for his data is somewhat different from the solution in the present study. Rather, the remarkable similarity between the two solutions lends strength to the dimensional interpretations in the present study.

The findings of the present study are most similar to prior research with respect to the normality dimension. Numerous studies have found comparable dimensions, for example, abnormal vs. typical (Guskin, 1963) and normal vs. disabilities (Schmelkin, 1982). Normality is also a constant theme throughout rehabilitation literature and the 'deification' of normality in our society is recognized as a myth more debilitating than actual functional limitations resulting from disabilities (DeLoach & Greer, 1981; B. A. Wright, 1983). Consequently, this dimension should be a prime target for interventions aimed at changing attitudes toward disabilities. The severity and controllability dimensions found in the present study are different from the dimensions found in previous research on disability perceptions. Severity and controllability are attributes which can be applied to a wide range of disabilities, and add something beyond a functional classification of disabilities. Both severity and controllability can be targets for changing attitudes towards disabilities. In addition, controllability is a concept linking perceptions of disabilities to attributional research in psychology, with its wealth of information about motivation and attitude change.

In summary, rehabilitation students' perceptions of disabilities were based on dimensions of severity, normality, and controllability. The most salient of these dimensions was the normality dimension. As compared to the unsuccessful applicants to the rehabilitation program, the second year students attached less importance to the normality dimension. In addition, a slight trend of decreasing importance of the normality dimension was found to be related to students' increasing educational and practical rehabilitation experience. These results provide limited support to the notion that this program's current rehabilitation training practices may have effects, especially by the second year, on students' disability perceptions. Nevertheless, a case could be made that the MDS dimensions, in general, are relatively stable across groups; suggesting, in turn, that attention to rehabilitation program applicants' perceptions of disabilities may be important, or that curricula should be designed to affect these perceptions. These alternative interpretations of the present results can only be addressed with a longitudinal study.

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Table 1

Stimulus Coordinates for the Three-Dimensional MDS Solution

	Dimension		
Disability	1	2	3
Arthritis	1.59	0.61	0.10
Emphysema	0.84	-1.51	-1.12
Alcoholism	-1.07	-0.29	-1.28
Cerebral Palsy	0.40	-0.22	1.61
Stroke	0.88	-0.28	1.11
Visual Impairment	-0.01	1.78	-0.16
Epilepsy	-0.03	-1.04	0.98
Cancer	0.82	-1.44	-0.98
Hearing Impairment	-0.24	1.81	0.17
Schizophrenia	-1.90	-0.60	-0.02
Diabetes	0.23	0.56	-1.47
Mental Retardation	-1.51	0.16	1.06

Note. n = 66.

Table 2

Correlations of Three-Dimensional Coordinates with Attribute Ratings

	Multiple	Dimension		
Attribute rating	R	1	2	3
Coincident				
Normality	.93**	.73**	.13	-.58*
Employability	.65	.49*	.17	-.39
Severity	.61	.11	.52*	-.27
Controllability	.80*	.02	.35	.74**
Attractiveness	.79*	-.31	-.38	.60*
Counseling preference	.67	-.60*	-.22	-.16
Familiarity	.60	-.45	-.05	-.37
A posteriori				
Psychological-physical symptoms	.94**	.92**	.17	-.06
Consequences	.91**	.87**	.22	-.01
Prognosis	.70	.39	.53*	-.19
Amenability to rehabilitation	.59	-.07	.59*	.04
Spread	.68	-.38	-.55*	-.02
Responsibility	.72	.07	.34	.64**
Stereotyping	.73	.41	-.21	-.61*
Visibility	.69	-.07	-.05	-.69**

a. Coincident ratings were obtained from rehabilitation students (n = 66) who completed the MDS task. b. A posteriori ratings were obtained from rehabilitation students (n = 25) who did not complete the MDS task.

*p<.05. **p<.01.

Appendix

Attribute Scales

Attribute	Abbreviated Scale Statement
Normality	How normal the general public perceives an individual with this disability (1 = not at all normal, 7 = normal)
Employability	How difficult it would be for a person with this disability to obtain and maintain full-time competitive employment (1 = extremely difficult, 4 = moderately difficult, 7 = not at all difficult)
Severity	Your perception of the severity of the disability (1 = very severe, 7 = not at all severe
Controllability	The extent of control an individual has over the conditions which led to the disability (1 = complete control, 7 = very little control)
Attractiveness	How attractive you perceive a person with this disability (1 = most attractive, 7 = least attractive)

(Appendix continues)

Attribute	Abbreviated Scale Statement
Counseling Preference	Your preference for counseling a client with this disability (1 = not at all interested, 4 = moderately interested, 7 = extremely interested)
Familiarity	How familiar you are with this disability (1 = not at all familiar, 4 = moderately familiar, 7 = very familiar)
Psychological-physical symptoms	Describe the symptoms of this disability (1 = mostly psychological symptoms, 7 = mostly physical symptoms)
Consequences	Describe the consequences of this disability (1 = mostly mental/psychological consequences, 7 = mostly physical consequences)
Prognosis	Describe the prognosis for an individual with this disability to live a normal life (1 = very poor, 7 = very good)
Amenability to rehabilitation	How amenable this disability is to rehabilitation methods (1 = not at all, 4 = moderately, 7 = extremely)

(Appendix continues)

Attribute	Abbreviated Scale Statement
Spread	Describe the degree to which an individual's life would be "taken over" by this disability (1 = not at all, 7 = completely)
Responsibility	In general how responsible an individual is for the conditions which lead to the disability (1 = completely, 4 = moderately, 7 = not at all)
Stereotyping	Describe the degree to which outside observers would identify an individual with the disability itself (1 = completely, 7 = not at all)
Visibility	Describe the visibility of the disability itself (visibility of the actual impairment) (1 = visible, 7 = invisible)

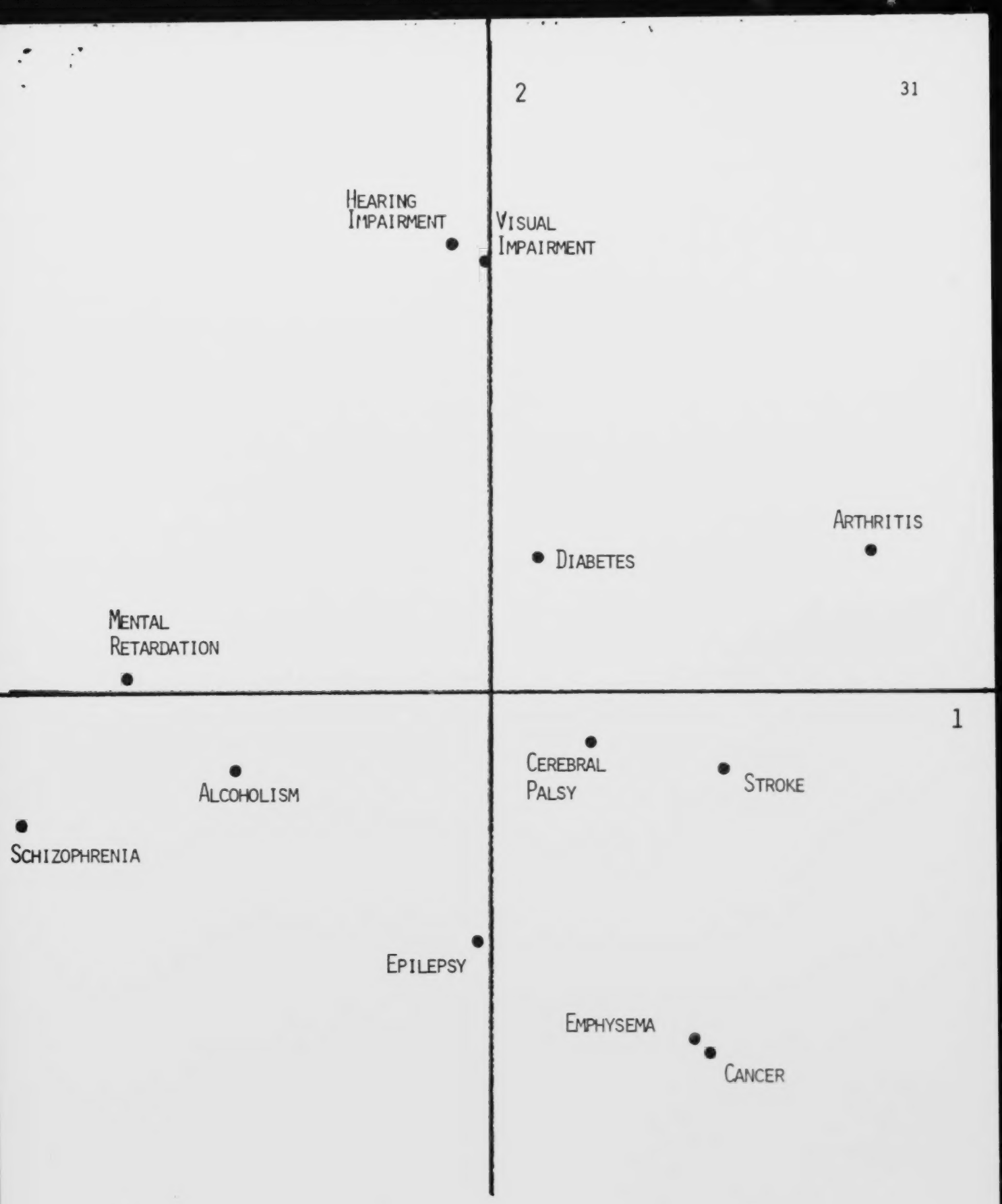

FIGURE 1. DIMENSION 1, THE NORMALITY DIMENSION, PLOTTED AGAINST DIMENSION 2, THE SEVERITY DIMENSION

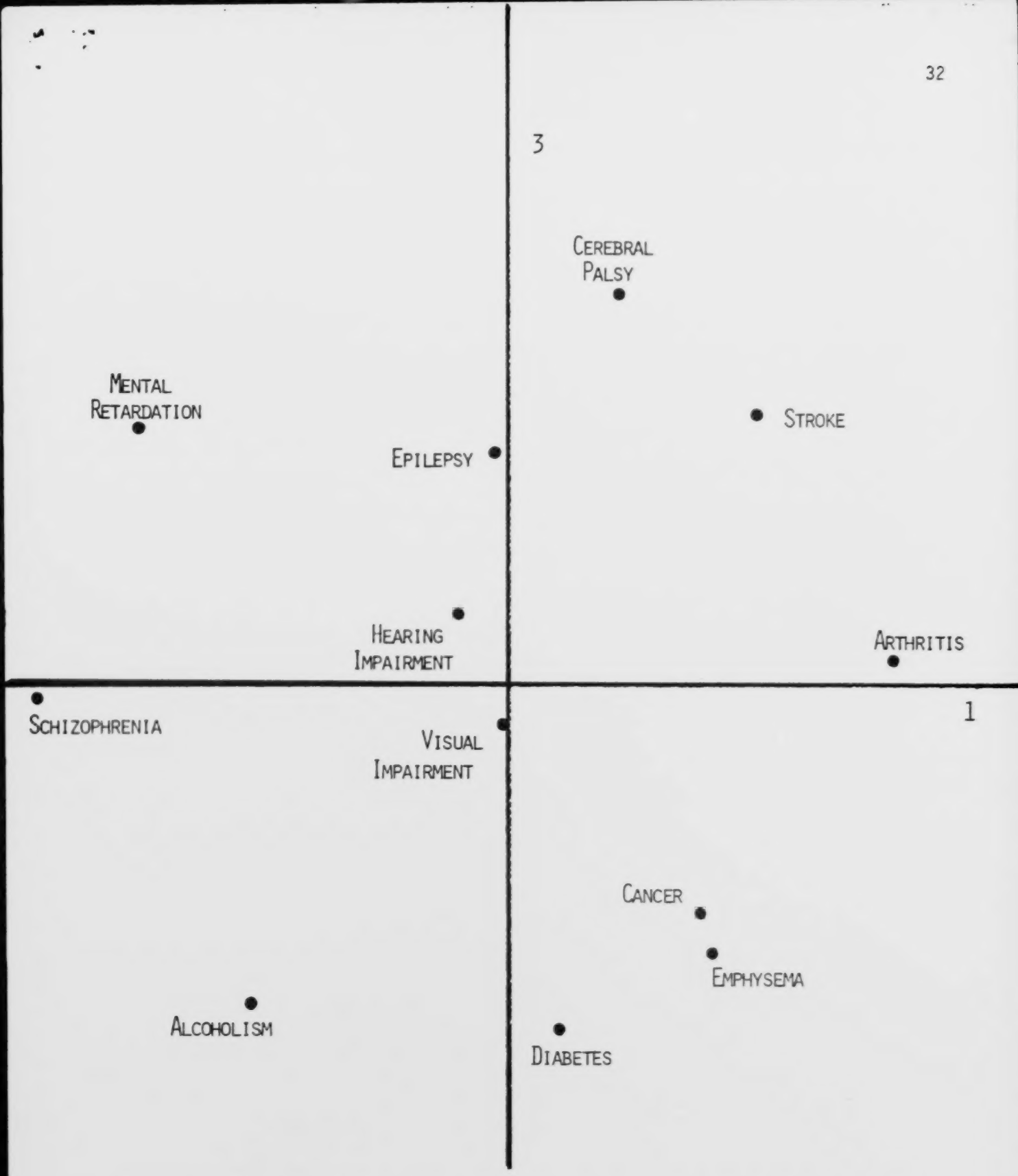

FIGURE 2. DIMENSION 1, THE NORMALITY DIMENSION, PLOTTED AGAINST DIMENSION 3, THE CONTROLLABILITY DIMENSION.